

necessary some *penta* is also applied. It is then laid out into plots about 5 ft. square, with necessary irrigation channels. One Chittak of seed (10 tolas) is sown in 20 such beds and each bed supplies fodder for one pair of cattle every day. The seed is obtained from 'Gavaras' at Vizianagaram at a cost of two to four annas. The first cutting is commenced in about a fortnight after sowing, and thereafter one bed is cut every day, so that each gives a cutting once in twenty days in rotation. When at its best, each bed yields about ten pounds of green fodder at each cutting and about six pounds on an average. The crop is irrigated at intervals of about 5 to 10 days throughout the dry and hot season and goes on giving fair cuttings till the South-west monsoon precipitates heavy rain, which it cannot stand, and therefore dies out gradually by about August-September.

3. This fodder is considered best for working buffaloes; working bullocks are also fed with it. But milch cattle are never fed with it, as it is believed to heat the system and reduce the yield of milk. As human food also it is well known to heat the system. Goats and sheep also eat the fodder but rarely get it.

4. It may be worthwhile analysing this fodder and finding its merits as a fodder crop. It will be seen that, calculated from the yields of the small areas on which it is usually raised, the outturn runs up about 50 tons per acre during the eight months of its growth.

<https://doi.org/10.29321/MAJ.10.A05024>

EARLY AGRICULTURAL EXTENSION WORK IN U.S.A.

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Organizations known as Agricultural Societies were in existence somewhere at the beginning of the 19th century. They were either State or regional societies and their object was primarily to improve agriculture. This they did by disseminating agricultural information through their publications and lectures and by promoting the formation of local organizations for people engaged and interested in agriculture. The societies held fairs, where animals were sold, agricultural products were exhibited for prizes, and addresses were made by prominent agriculturists and scientists who were invited to give lectures. A large number of county societies came into existence as a result of their labour. By about the second half of the 19th century State Boards of Agriculture were formed in several States (by legislature). These Boards superseded, and carried on the work done earlier by the above mentioned societies. In addition they held short courses at the County Agricultural College, advocated the formation of Farmers' Clubs and sent lecturers to them.

The Boards expected these Farmers' Clubs to be 'ambulatory schools' which would awaken a deeper interest in agriculture and be the channels for the easy communication of researches and improvements. Local organizations in the counties were holding meetings, discussions and special classes. Such gatherings were similar to the contemplated Farmers'

Clubs and were very successful. In some counties such meetings and discussions were held at one particular place and at any convenient time, while in some others they were held at regular intervals and at various places in the county. Being very popular with the agricultural community, such gatherings increased rapidly in number and came to be called as Farmers' Institutes. The Agricultural Colleges in certain States were conducting Farmers' Institutes. The Boards were giving financial help in certain cases. The lectures when good, were printed and distributed, and in some counties farm papers were started giving special information about these institutes. With the States legislating monetary help, a more permanent basis was accorded to them. The lecturers underwent hardships and tried their best to get a good audience. The agricultural community took the fullest advantage by invariably attending these gatherings. The Ladies' branch of these institutes devoted attention to discussing subjects like dairying, poultry-farming, cooking, nutritive value of foods, etc.

The beginning of the 20th century saw the movement well rooted in U.S.A.,—so 'well grounded in public opinion and policy as to be recognized a part of the Governmental machinery'. On an average 2,000 institutes were held during a year and a total attendance of 500,000 farmers was recorded. Miscellaneous subjects were discussed and charts, photographs and specimens were freely demonstrated. Exhibitions were held and prizes offered to promote a competitive feeling. Two day-institutes were common (lectures, discussions, demonstrations, etc., at one place were generally carried on over a period of two consecutive days) though shorter period institutes were not rare (the longest not being held in winter). Soon American Association of Farmers' Institutes Workers was organized with the object of exchanging views and comparing experiences and to acknowledge the mistakes of each, so that others may not come across the same failures. Membership was open to workers in farmers' institutes and all States were fairly represented. Later on this Association was brought into closer contact with the department and a Farmers' Institute Specialist was appointed.

The Office of Experimental Stations recognized these institutes as useful agents in the dissemination of the practical results of their agricultural experiments. Fostered up by such organizations, the farmers' institute movement progressed steadily. The nation-wide expansion of this movement made it desirable to have a federal agency for the promotion of this great enterprise. The Secretary for Agriculture was requested to help the institutes in the matter of material and organization. Financial aid was obtained from the Congress and a specialist was appointed in the Office of the Experiment Stations. His time and energy were to be spent in visiting and advising the institutes, studying the problems of their management and elucidating the path by which the department might substantially help the movement. The Office of Experiment Stations published reports about the institutes and their work and also the nature of the extension work done in other countries for the benefit of these institutes. Lantern slides were prepared for distribution, outlines of lectures were printed, and the method of instruction was explained to the lecturers. The specialist visited these institutes and rendered useful help.

The rapid growth of the science and also the number of the institutes made it difficult for the lecturers in these institutes to pull on merely with departmental publications. So it became necessary to hold one or two week classes for these lecturers. To these 'Round up Institutes' farmers and others interested were allowed in certain States. There was also a demand for systematic education in the institutes and so the time was lengthened in certain cases and these became extension schools and short course classes, but still they were itinerant.

Side by side with these developed the women's institutes, and lady-lecturers were appointed for them. Lectures on domestic science, home economics, etc., were given, cooking competitions were held and circulating libraries were provided. The interest grew up in boys and girls and special clubs were organised for them. They grew crops by themselves and these were exhibited for prizes. They were taken on tours to farms and agricultural colleges and lectures were made to them. Thus a living interest was instituted in the younger generations. Schools and colleges took great interest in training the youths and this movement soon grew up by leaps and bounds.

A few of the subjects that were taken up in these institutes for lectures and discussions were:—Selection of seed, use of fertilizers, soil and moisture conservation, crops, diversification and rotation of crops, control of crop pests and fungus diseases, veterinary subjects, poultry, dairying, bee-keeping, horticulture, and general subjects like roads, economy in agriculture, agriculture as a profession, etc. etc.

The passage of the Smith-Lever Act gave more funds to the Agricultural Colleges for extension work and consequently less was proportioned to the institute movement. The colleges withdrew themselves completely to improve their educative work. The States also encouraged the Smith-Lever Act and were less generous towards the farmers' institutes. Vocational education was provided in the secondary schools. Due to these reasons, the movement declined considerably.

Special trains, well equipped with lecturers, charts, specimens, books, bulletins and other demonstration materials were run about this time. They halted at farming centres and the farmers received great benefit. The cost of running the trains was mostly met out by the Companies, while the colleges provided material and lecturers. This practice has died out in recent years. The companies had often helped in other ways of marketing, conveying bulls, pigs, etc.

It has been said that the colleges were carrying on extension work by successfully conducting farmers' institutes in certain States. Some others were providing lecturers and demonstration material both for the institutes and the special trains. In addition some were giving short courses, the time ranging from about ten days to two or three months. Some were giving postal tuition. By these courses, in a few years, a large number of people living near as well as far away from these colleges received the benefit of their instruction. People so trained took an examination at the end of the course. Further itinerant schools were conducted, experiments were carried out and bulletins were printed for distribution. Universities organised extension branches to successfully carry on such work. In some

universities a special officer was appointed and he was in charge of the correspondence courses. He was also to visit the farmers' institutes, promote the formation of boys' clubs and in general to awaken an interest in the younger generation. The extension work done by the colleges having increased enormously, a committee was formed to co-ordinate and organize under definite lines the work done by the various colleges in U.S.A. The committee recommended a director and a corps of young men attached to each college extension branch so as to reach those who could not come to the college. These colleges were working in co-operation with all other organisations conducting extension work. A development was effected which completely separated the college work from that of the extension. Care was taken to see that extension work was not a plan to trap students to the college but fundamentally a means of reaching the farmer at his door. With the appropriation of State funds the colleges were able to carry on the work on a broader basis. A committee appointed drew up an elaborate plan for the extension work, urged the employment of capable men, advocated special training for such men and wanted all extension work to be carried by the colleges alone.

By about this time Professor Knapp established a number of demonstration farms to prove his theory of diversified agriculture—principally in introducing cotton. He believes that demonstrations carried by public expenses were not so impressive to the farmer as those carried by himself on his own land. The invasion of the cotton weevil induced the farmers to co-operate in meeting out the attack. A large amount of the money set to fight against the pest was placed at the disposal of Prof. Knapp 'to bring home to the farmer, on his own farm, information which would enable him to grow cotton despite the presence of the weevil.' Large numbers of agents were employed, who gave lectures and induced the farmers to hold demonstration on their own farms. The farmers heartily co-operated with the agents and better methods of farming and new ways of facing the weevil were experimented. Such farm demonstrations were successful and profits were reported in due course. The General Education Board of U.S.A. became interested in this movement and gave financial help to those States, which could not maintain sufficient agents by themselves. Farmers' Banks and many such other organisation came forward to help this enterprise. Negro agents were employed for the negro farmers. The object of this movement as stated by Prof. Knapp was for the economic betterment of the farmer by improving his cultivation. The movement soon gained a good hold among the farmers and came to be known as the Farmers' Co-operative Demonstration Work.

Advantage was taken of the existing Boys' Clubs and they were asked to grow certain crops on their own lands. Corn being popular, a large number of Corn Clubs were started by the boys. Better cultural methods were induced in the younger generation by holding competitive exhibitions. The interest was taken by girls also and Tomato Clubs became very popular with them, poultry and vegetable clubs were also formed. The popularity of the movement enlisted the co-operation of the Education Board. Ladies took great interest in these clubs, and agents who came to visit these farms, especially lady agents, always found occasion to give a word or two of advice, that spared the ladies from many a domestic dilemma.

When the farmers found these demonstrations to be profitable, they were not only eager to apply these proved principles in their extensive agriculture, but also ready and willing to carry out new demonstrations. Unfortunately for the movement Prof. Knapp breathed his last. The authorities took a wise step in appointing his son in his place, who imbued with his father's ideals and working with the same earnest zeal more than justified their choice. Being a federal enterprise from the beginning, best hands were selected for carrying on the work of the agents so that these people could tackle with the local difficulties. At the beginning, the colleges and the Office of the Experiment Stations viewed this movement with disfavour, but soon their strong hold on the farmer attracted them. They began to co-operate and this was a great advantage for the agents, for when they were not able to cope up with some knotty problems, they could receive some enlightenment from such institutions.

The Bureau of Plant Industry organised the Farm Management Office which carried on extension work in the south by employing county agents. These agents worked in co-operation with all other organisations carrying on extension work. Chambers of Commerce, Boards of Trade and many other private associations took a great interest in the promotion of the county agent work. Cases are not rare when private gentlemen donated liberally for the cause.

The extension work carried out by the colleges by this time increased so rapidly that it badly affected their teaching and research. So these colleges demanded federal funds, primarily to meet the expenses of the extension work and also to stimulate State appropriations. As a result of this the Smith-Lever Act was passed by the Congress which liberally financed the colleges for carrying on extension work only. As a result of this, the colleges were enabled to carry on the work on a greater scale.

The various agencies concerned in this propaganda work were working harmoniously for they had recognised that their end was the same. Though the farmers' institute movement declined in the latter years, the county agent work in the south, the farmers' co-operative demonstration work in other places and the colleges in all States carried on the extension work. The department was merely doing control work. The same organisations did good work at the time of the Great War when there was a heavy demand for increased supply of food-stuffs.

In conclusion, the national enthusiasm for bettering the economical condition of the farmers is worth mentioning. Chambers of Commerce, Boards of Trade, Private associations and gentlemen have time and again contributed their mite for the cause. The willingness of the farmer to co-operate with these agencies is highly commendable. Special mention must be made of the employees in the various movements who without heeding petty hardships plunged headlong into the enterprise. The schemes proposed were always comprehensive and workable. It is praiseworthy that the Colleges should have taken to extension work in addition to their teaching and research. The Congress, States and private agencies were generously helping the right cause. It must not be forgotten that the various movements were marching hand in hand towards their goal.